a valve, in fluid communication with the compressor, operative to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.

Claim 5. (NEW) The air conditioning or refrigeration system of claim 4 further comprising a capacity controller operative to generate a control signal corresponding to desired capacity modulation and operatively connected to the valve to send capacity control signals to cycle the valve with a cycling time shorter than the response time of the system to modulate compressor capacity.

Claim 6. (NEW) The air conditioning or refrigeration system of claim 4 wherein the valve is cycled between a fully open and a fully closed position.

Claim 7. (NEW) The air conditioning or refrigeration system of claim 5 wherein the controller comprises a microprocessor.

Claim 8. (NEW) The air conditioning or refrigeration system of claim 4 wherein the valve is a solenoid valve.

Claim 9. (NEW) An air conditioning or refrigeration system comprising:

a compressor having a refrigeration fluid suction port and a refrigeration fluid discharge port, being operative to compress refrigeration fluid received via the suction port and discharged via the discharge port;

a refrigerant flow line operative to carry refrigeration fluid and in fluid communication with the compressor;

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a valve in the refrigerant flow line which is operatively connected to the controller to receive capacity control signals from the controller and operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.

Claim 10. (NEW) The system of claim 9 wherein the valve is cycled between a fully open position and a fully closed position.

Claim 11. (NEW) The system of claim 9 wherein the system capacity controller comprises a microprocessor.

Claim 12. (NEW) The system of claim 9 wherein the valve is a solenoid valve.

Claim 13. (NEW) The system of claim 10 wherein the valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.

Claim 14. (NEW) An air conditioning or refrigeration system comprising:

a compressor having a refrigeration fluid suction port and a refrigeration fluid discharge port, being operative to compress refrigeration fluid received via the suction port and discharged via the discharge port;

a refrigerant flow line operative to carry refrigeration fluid and in fluid communication with the compressor;

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a solenoid valve in the refrigerant flow line which is operatively connected to the controller to receive capacity control signals from the controller and operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.

Claim 15. (NEW) The system of claim 14 wherein the system capacity controller comprises a microprocessor.

Claim 16. (NEW) The system of claim 14 wherein the solenoid valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.

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Claim 17. (NEW) A capacity modulated compressor for an air conditioning or refrigeration system having a refrigerant flow line, comprising:

a compressor housing comprising a compression chamber, at least one refrigerant injection port operative to pass refrigerant to the compression chamber, and at least one refrigerant discharge port operative to pass compressed refrigerant from the compression chamber;

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a valve operatively connected to the controller to receive capacity control signals from the controller and operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.

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Claim 18. (NEW) The compressor of claim 17 wherein the valve is cycled between a fully closed position and a fully open position.

Claim 19. (NEW) The compressor of claim 17 wherein the valve is disposed in a refrigerant flow line upstream with respect to refrigerant flow to said at least one refrigerant injection port.

Claim 20. (NEW) The compressor of claim 17 wherein the valve is mounted to the compressor housing at the refrigerant injection port.

Claim 21. (NEW) The compressor of claim 17 wherein the system capacity controller comprises a microprocessor.

Claim 22. (NEW) The compressor of claim 17 wherein the valve is a solenoid valve.

Claim 23. (NEW) The compressor of claim 18 wherein the valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.

Claim 24. (NEW) A capacity modulated compressor for an air conditioning or refrigeration system having a refrigerant flow line, comprising:

a compressor housing comprising a compression chamber, at least one refrigerant injection port operative to pass refrigerant to the compression chamber, and at least one refrigerant discharge port operative to pass compressed refrigerant from the compression chamber;

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a solenoid valve operatively connected to the controller to receive capacity control signals from the controller and operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.

Claim 25. (NEW) The compressor of claim 24 wherein the solenoid valve is disposed in a refrigerant flow line upstream with respect to refrigerant flow to said at least one refrigerant injection port.

Claim 26. (NEW) The compressor of claim 24 wherein the solenoid valve is mounted to the compressor housing at the refrigerant injection port.

Claim 27. (NEW) The compressor of claim 24 wherein the system capacity controller comprises a microprocessor.

Claim 28. (NEW) The compressor of claim 24 wherein the solenoid valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.

Claim 29. (NEW) A capacity modulated compressor comprising:

a compressor having a suction inlet for supplying suction gas to the compressor;

a valve provided in the suction gas flow path to the compressor, the valve being operable between open and closed positions to cyclically allow and prevent flow of suction gas into the compressor;

a controller for actuating the valve between the open and closed positions, the controller being operative to cycle the valve such that its cycle time is shorter than the response time of the system to modulate compressor capacity.

Claim 30. (NEW) The capacity modulated compressor of claim 29 wherein the valve is positioned in close proximity to the compressor.

Claim 31. (NEW) The capacity modulated compressor of claim 29 wherein the valve is a bi-directional valve.

Claim 32. (NEW) The capacity modulated compressor of claim 29 wherein the valve is a solenoid valve.

Claim 33. (NEW) A method of modulating the capacity of a compressor in an air conditioning or refrigeration system, comprising cycling a valve, in fluid communication with the compressor, using a cycle time shorter than the response time of the system to modulate compressor capacity.

Claim 34. (NEW) The method of claim 33 wherein the valve is a solenoid valve.

Claim 35. (NEW) A method of modulating the capacity of a compressor in a closed refrigerant circulating system, said compressor comprising a compression chamber having a port connected to a refrigerant line of the system through which refrigerant is supplied to the compression chamber, comprising:

rapidly cycling a solenoid valve disposed in the refrigerant line upstream of said port between its fully open position and its fully closed position to modulate compressor capacity.